SE | III | CBSGS | Chem | CEE

Q.P. Code : 537001

(3 Hours) [Total Marks : 100

N.B. : (1) Question number **one is compulsory.**
(2) Answer any **Three** questions from the rest.
(3) Assume suitable data wherever necessary.

1. Answer the following :- **20**
   a) What is the need for provision of depreciation?
   b) What is the distinction between profit & loss account and balance sheet?
   c) What is Diseconomies of scale?
   d) Explain minimum acceptable rate of return.
   e) Explain Turnover ratio, Cash ratio and Current ratio.

2. a) The TCI for a conventional chemical plant is \$1,500,000, and the plant produces 3 million kg of product annually. The selling price of the product is \$0.82/kg. Working capital amounts to 15 % of the TCI. The investment is from company funds, and no interest is charged. Delivered raw material costs for the product are \$0.09/kg; labor, \$0.08/kg; utilities, 0.05/kg; and packaging, \$0.008/kg. Distribution costs are 5 % of the total product cost. Estimate the following **10**
   i) Manufacturing cost per kg of product
   ii) Total product cost per year

   b) Self-insurance is being considered for one area of a chemical plant. The FCI involved is \$50000, and insurance costs for complete protection amount to \$500 per year. If self-insurance is used, a reserve fund will be set up under the company's jurisdiction, and annual premiums of \$400 will be deposited in this fund under an ordinary annuity plan. All the money in the fund can assume to earn interest at a compounded interest rate of 6 %. How much money must be deposited in the fund at the beginning of the program in order to have sufficient funds accumulated to replace a \$50000 loss after 10 years? **10**

3. A company has three alternative investments that are being considered. Because all three investments are of the same type of unit and provide the same service, only one investments can be accepted. The risk factors are same for all three cases. Company policies, based on the current economic situation, dictate that a minimum annual return on the original investment of 15 % after taxes be predicted for any unnecessary investment. Company policies also dictate that straight line method be used over the service life of **20**

SE | III | CBSGS | Chem | CEE

the investment with accounting for the salvage value. For time-value-of-money calculations, the continuous cash flow and continuous compounding relationships are to be used. Land value and pre-startup costs can be ignored. Use the following data to determine the following profitability evaluation criteria

1) Rate of return on investment
2) Payback period
3) Net present worth
4) Discounted cash flow rate of return

Investment number	Total initial FCI ($)	WCI ($)	Salvage value at the end of service life ($)	Service life, years	Annual earnings after taxes ($), This is total annual income minus all costs except depreciation
1	100,000	10,000	10,000	5	30,000/31,000/36,000/ 40,000/43,000
2	170,000	10,000	15,000	7	42,000 (Constant)
3	210,000	15,000	20,000	8	48,000 (Constant)

4. Explain the following terms in detail. **(Any five)** :- **20**

i) Pure, Perfect and Imperfect competition
ii) Barriers to economic growth
iii) Demand curve and Supply curve
iv) Concept of need-hierarchy
v) Price discrimination-First, second and third degree
vi) Exceptions to law of demand

5. a) A process with a depreciable capital investment of $100 million is to be constructed over a three year period. At start up, $ 20 million of working capital is required. The plant is expected to operate for 10 years. At full capacity expected for the third and subsequent years of operation, the sales revenues are projected to be $150 million per year, and the total operating expenses, excluding depreciation, are projected to be $100 million per year. During the first and second year of operation, the sales revenues are anticipated to be 50 and 75 % of sales revenues projected in the third and subsequent years, respectively. The operating expenses during the first and second years will be the same as in the third and subsequent years. Assume that the income tax rate is 35 %. Using the third year as basis, determine **12**

a) The return on investment after taxes
b) The payback period

SE | III | CBSGS | Chem | CEE

Q.P. Code : 537001

5. b) Explain the concept of cost-total cost, fixed and variable cost, direct and indirect cost. 8

6. Write short notes on:- **(Any four)** **20**

i) Cost index and scaling

ii) Annuity

iii) Capital gains tax

iv) Compounding and discounting factor

v) Methods of calculating profitability
